

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application.

1. (Currently Amended) A charge pump circuit to supply current to a controlled oscillating circuit, the charge pump circuit comprising:

a first switch comprising a first state, said first switch coupled to a gate of an output diode; and

a second switch comprising a second state opposite from said first state, the second switch coupled to ~~a source~~ an anode of the output diode,

wherein the second switch ~~provides~~ is configured to provide a charge up current to the output diode when the second state comprises an ON state,

wherein the first switch is coupled to a capacitance configured to hold a bias when said the second switch state comprises the ON state, and

wherein the output diode is configured to provide the charge up current to an offset current.

2. (Original) The charge pump circuit of claim 1, wherein the first switch comprises a diode having a first semiconductor material.

3. (Original) The charge pump circuit of claim 1, wherein the second switch comprises a diode having a second semiconductor material.

4. (Canceled)

5. (Canceled)

6. (Original) The charge pump circuit of claim 1, wherein the first switch disconnects the gate of the output diode when said first state comprises an OFF state.

7. (Original) The charge pump circuit of claim 1, wherein the first switch comprises an n-channel metal oxide semiconductor.

8. (Original) The charge pump circuit of claim 1, wherein the second switch comprises a p-channel metal oxide semiconductor.

9 - 26. (Cancelled)

27. (New) A circuit, comprising:

an oscillator controlled by a current; and

a charge pump circuit that generates the current in response to a signal, wherein the charge pump circuit includes:

a first switch comprising a first state, said first switch coupled to a gate of an output diode; and

a second switch comprising a second state opposite from said first state, the second switch coupled to an anode of the output diode,

wherein the second switch is configured to provide the current to the output diode when the second state comprises an ON state,

wherein the first switch is coupled to a capacitance configured to hold a bias when the second state comprises the ON state, and

wherein the output diode is configured to provide the current to the oscillator.

28. (New) The circuit of claim 27, wherein the current is a charge up current.

29. (New) The circuit of claim 27, wherein the current is a charge down current.

30. (New) The circuit of claim 27, further comprising a low pass filter coupled between the oscillator and the charge pump circuit.

31. (New) The circuit of claim 27, further comprising a phase/frequency detector coupled to charge pump circuit and configured to provide the signal.

32. (New) The circuit of claim 31, further comprising a multi-modulus divider coupled between the phase/frequency detector and the oscillator.

33. (New) The circuit of claim 32, wherein the multi-modulus divider is configured to output a feedback signal.

34. (New) The circuit of claim 32, wherein the charge pump circuit includes a time constant applied by the first switch.

35. (New) The circuit of claim 34, wherein a period for the time constant for the first switch is greater than a period for the ON state for the second switch.